

What is claimed is:

1. A resin dispersion of a cationic electrodeposition including an aqueous dispersion prepared by mixing:

5 about 35-45 parts by weight of a cationic electrodeposition resin prepared in the presence of an organic solvent from (a) about 40-60% by weight of a cationic electrodeposition synthetic resin produced by an epoxy-amino addition reaction (b) about 5-10% by weight of an acrylic cationic electrodeposition resin having an amino group (c) about 1-3% by weight of a fatty acid ester resin synthesized by an esterification reaction of styrene-allyl alcohol copolymer and fatty acid and (d) about 30-50% by weight of blocked polyisocyanate curing agent;

 about 55-65 parts by weight of deionized water;

 about 0.3-1.5 parts by weight of an acid for neutralization;

15 about 1-5 parts by weight of a reaction product of manganese phosphate and an acid diluted in an deionized water to 10%; and

 about 0.5-1 parts by weight of a cationic surfactant.

2. A resin dispersion of a cationic electrodeposition as claimed in claim 1, wherein said acrylic cationic electrodeposition resin is a copolymerized resin obtained by copolymerizing at least one selected from the group consisting of butyl acrylate,

methyl acrylate, hydroxyethyl acrylate, styrene, methyl methacrylate and (N, N-dimethyl)aminoethyl methacrylate.

5 3. A resin dispersion of a cationic electrodeposition as claimed in claim 1, wherein a solid content in said resin dispersion is about 30-40% by weight and a mean size of particles contained in said resin dispersion is about 60 nm or less.

4. A resin dispersion of a cationic electrodeposition as claimed in claim 1, wherein an amount of organic solvents in said resin dispersion is 0.5% by weight or less.

5. A method of preparing a resin dispersion of a cationic electrodeposition comprising the steps of:

15 preparing a cationic electrodeposition resin in the presence of an organic solvent from (a) about 40-60% by weight of a cationic electrodeposition synthetic resin produced by an epoxy-amino addition reaction (b) about 5-10% by weight of an acrylic cationic electrodeposition resin having an amino group (c) about 1-3% by weight of a fatty acid ester resin synthesized by an esterification reaction of styrene-allyl alcohol copolymer and fatty acid and (d) about 30-50% by weight of blocked polyisocyanate
20 curing agent;

preparing an aqueous dispersion by mixing about 35-45 parts by weight of said cationic electrodeposition resin, about 55-65 parts by weight of deionized water, about 0.3-1.5 parts by weight of an acid for a neutralization, about 1-5 parts by weight of a reaction product of manganese phosphate and an acid diluted in an deionized water to 10% and about 0.5-1 parts by weight of a cationic surfactant; and

removing organic solvents having a low boiling point from said aqueous dispersion by extracting and then filtering.

6. A method of preparing a resin dispersion of a cationic electrodeposition as claimed in claim 5, wherein said acid reacting with said manganese phosphate is at least one selected from the group consisting of phosphoric acid, acetic acid, formic acid, lactic acid and sulfamic acid.

7. A pigment paste composition comprising (a) about 15-30% by weight of pigment grinding vehicle (b) about 2-6% by weight of an anticorrosive pigment and (c) about 0.7-2.3% by weight of dibutyl tin oxide, a ratio of solid content of said pigment/pigment grinding vehicle being about 1/0.2 – 1/0.45.

8. A pigment paste composition as claimed in claim 7, wherein said pigment grinding vehicle is obtainable from about 25-35% by weight of polyglycidyl ether of bisphenol A, about 5-12% by weight of propyleneglycol monomethyl ether acetate,

about 8-15% by weight of partially blocked isocyanate cross-linking agent, about 25-40% by weight of ethylene glycol monobutyl ether, about 10-20% by weight of organic tertiary amino acid salt and about 0-5% by weight of deionized water.

5 9. ^{0.5} A pigment paste composition as claimed in claim 8, wherein an epoxy equivalence of said polyglycidyl ether of bisphenol A is in a range of about 900-1200.

10. ^{0.5} A pigment paste composition as claimed in claim 7, wherein said anticorrosive pigment is at least one selected from the group consisting of bismuth hydroxide, bismuth trioxide, bismuth oxide, aluminum tri-polyphosphate hydrate and magnesium aluminum hydroxide carbonate hydrate.

11. ^{0.5} A cationic electrodeposition coating composition comprising an aqueous dispersion and a pigment paste composition, said aqueous dispersion being prepared by mixing:

15 about 35-45 parts by weight of a cationic electrodeposition resin prepared in the presence of an organic solvent from (a) about 40-60% by weight of a cationic electrodeposition synthetic resin produced by an epoxy-amino addition reaction (b) about 5-10% by weight of an acrylic cationic electrodeposition resin having an amino group (c) about 1-3% by weight of a fatty acid ester resin synthesized by an

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esterification reaction of styrene-allyl alcohol copolymer and fatty acid and (d) about 30-50% by weight of blocked polyisocyanate curing agent;

about 55-65 parts by weight of deionized water;

about 0.3-1.5 parts by weight of an acid for neutralization;

5 about 1-5 parts by weight of a reaction product of manganese phosphate and an acid diluted in an deionized water to 10%; and

about 0.5-1 parts by weight of a cationic surfactant.

12. A cationic electrodeposition coating composition as claimed in claim 11, wherein said pigment paste composition comprises (a) about 15-30% by weight of pigment grinding vehicle (b) about 2-6% by weight of an anticorrosive pigment and (c) about 0.7-2.3% by weight of dibutyl tin oxide, a ratio of solid content of said pigment/pigment grinding vehicle being 1/0.2 – 1/0.45.

15 13. A cationic electrodeposition coating composition as claimed in claim 12, wherein said pigment grinding vehicle is obtainable from about 25-35% by weight of polyglycidyl ether of bisphenol A, about 5-12% by weight of propyleneglycol monomethyl ether acetate, about 8-15% by weight of partially blocked isocyanate cross-linking agent, about 25-40% by weight of ethylene glycol monobutyl ether, about
20 10-20% by weight of organic tertiary amino acid salt and about 0-5% by weight of deionized water.

14. A cationic electrodeposition coating composition as claimed in claim 13, wherein an epoxy equivalence of said polyglycidyl ether of bisphenol A is in a range of about 900-1200.

15. A cationic electrodeposition coating composition as claimed in claim 12, wherein said anticorrosive pigment is at least one selected from the group consisting of bismuth hydroxide, bismuth trioxide, bismuth oxide, aluminum tri-polyphosphate hydrate and magnesium aluminum hydroxide carbonate hydrate.

16. A method of preparing a cationic electrodeposition coating composition comprising the steps of:

preparing a cationic electrodeposition resin in the presence of an organic solvent from (a) about 40-60% by weight of a cationic electrodeposition synthetic resin produced by an epoxy-amino addition reaction (b) about 5-10% by weight of an acrylic cationic electrodeposition resin having an amino group (c) about 1-3% by weight of a fatty acid ester resin synthesized by an esterification reaction of styrene-allyl alcohol copolymer and fatty acid and (d) about 30-50% by weight of blocked polyisocyanate and blocked isoporone diisocyanate;

preparing an aqueous dispersion by mixing about 35-45 parts by weight of said cationic electrodeposition resin, about 55-65 parts by weight of deionized water, about

0.3-1.5 parts by weight of an acid for a neutralization, about 1-5 parts by weight of a reaction product of manganese phosphate and an acid diluted in an deionized water to 10% , and about 0.5-1 parts by weight of a cationic surfactant;

preparing a cationic electrodeposition resin dispersion by removing organic
5 solvents having a low boiling point from said aqueous dispersion by extracting and then filtering; and

mixing said resin dispersion of a cationic electrodeposition and a pigment paste composition.

17. A method of preparing a cationic electrodeposition coating composition as claimed in claim 16, wherein said acid reacting with said manganese phosphate is at least one selected from the group consisting of phosphoric acid, acetic acid formic acid, lactic acid and sulfamic acid.

15 18. A method of preparing a cationic electrodeposition coating composition as claimed in claim 16, wherein said extracting of said organic solvent is implemented at a temperature range of about 40-80°C under a pressure range of about 30-90 mmHg.

20 19. A method of preparing a cationic electrodeposition coating composition as claimed in claim 16, wherein said acid for neutralization is at least one selected from the group consisting of acetic acid, lactic acid, phosphoric acid and formic acid.

20. A cationic electrodeposition coating composition comprising:

a resin dispersion of a cationic electrodeposition; and

a pigment paste composition comprising (a) about 15-30% by weight of pigment
5 grinding vehicle (b) about 2-6% by weight of an anticorrosive pigment and (c) about 0.7-
2.3% by weight of dibutyl tin oxide, a ratio of solid content of said pigment/pigment
grinding vehicle being 1/0.2 – 1/0.45.

21. A cationic electrodeposition coating composition as claimed in claim 20,
wherein said anticorrosive pigment is at least one selected from the group consisting of
bismuth hydroxide, bismuth trioxide, bismuth oxide, aluminum tri-polyphosphate hydrate
and magnesium aluminum hydroxide carbonate hydrate.